Claims

What is claimed is:

1. A method for high aspect ratio pattern transfer of positive photoresist application comprising the steps of :

(1) obtaining a moldboard which is both pervious to light and has a protruding-and-recessing figure to form masking layer by way of sputtering deposition of masking material on said moldboard;

(2) after finishing solidifying said masking layer, grinding the protruding part of said figure of said moldboard to make said protruding part pervious to light;

(3) obtaining a substrate applied with positive photoresist and then urging the mold at a molding pressure into the film creating a thickness contrast pattern in the film, wherein the molding pressure is sufficiently high to transfer the features to the film and the molding pressure causes a local deformation in the mold which is less than the mold pattern lateral dimension with said substrate that has said protruding-and-recessing figure for further processing Step and Flash;

(4) after finishing said Step and Flash process, removing said

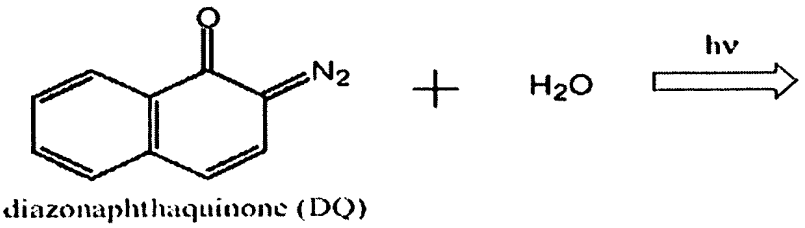
moldboard from said substrate; and

(5) with developer, washing exposed portions of the thin film covered with said positive photoresist on said substrate to show the unexposed portion whereby produces high aspect ratio pattern.

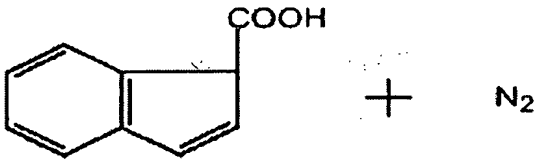
2. The method according to claim 1, wherein said positive photoresist comprises Novolac/DQ system that allows said exposed portion to become acid after flashing, and then so said exposed portion can be washed by alkaline developer.

3. The method according to claim 2, wherein the reaction mechanism of

said positive photoresist comprises:



diazonaphthaquinone (DQ)



indene carboxylic acid (ICA)

4. A method for high aspect ratio pattern transfer of negative photoresist application comprising the steps of:

(1) obtaining a moldboard which is both pervious to light and has a

protruding-and-recessing figure to form masking layer by way of sputtering deposition of masking material on said moldboard;

(2) after solidifying the masking layer, obtaining a substrate depositing negative photoresist on said substrate;

(3) covering said moldboard with said substrate that has said protruding-and-recessing figure for further processing Step and Flash from the said moldboard side;

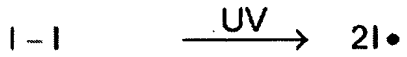
(4) after finishing said Step and Flash process, removing said moldboard from said substrate; and

(5) with developer, washing unexposed portions of the thin film covered with said negative photoresist on said substrate to show the exposed portion whereby produces high aspect ratio pattern.

5. The method according to claim 4, wherein said exposed portion of said negative photoresist forms macromolecule polymerization or is cross-linked after flashing and said unexposed portion can be washed by alkaline developer to form pattern needed.

6. The method according to claim 5, wherein the reaction mechanism of said negative photoresist comprises:

Photoinitiator + UV light = 2 radicals



radical will transfer to the acrylic molecular it combines to and induce an active chain reaction unit